

division. Two days, however, after a double section, the axis cylinders are part swollen by the action of the lymph, and part completely dissolved.

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**THE COURSE OF SWEAT NERVES AND VASO-MOTOR FIBRES.**—Induced by various contradictory statements, B. Luchsinger (*Pflüger's Arch.*, Vol. 18, XXXI., p. 483) has once more examined the course of the sweat nerves in the cat. He had previously claimed that the sweat nerves of the extremities were entirely derived from the sympathetic. This was confirmed by Ostroumoff and by Nawrocki. Adamkiewicz, however, and Vulpian had also found sweat nerves in the spinal roots of the extremity-nerves.

To decide this question a larger number of cats were examined. The abdominal sympathetic of one side was divided, and the animal either allowed to recover during some weeks or immediately tested, by placing it in a heated box. In the large majority the paw innervated by the divided sympathetic did not perspire in the least.

But in about one case in every six some sweat fibres did actually enter the nerves (of fore and hind extremity) through some route other than the sympathetic. In a second article, Luchsinger and Puelma (*Ibid.*, p. 489) followed the course of the vaso-motor fibres of the sciatic nerve of the cat. As an unexceptional result they found that the nerves going to the vessels of the hind extremity are derived both from the sympathetic and the spinal roots.

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**DIRECT IRRITATION OF NERVE CENTRES** has been studied by R. Mar-chand (*Pflüger's Archiv*, Vol. 18, XII., p. 511). In the first place, the frog's ventricle, separated from the greater part of the auricles, but still containing the ganglia situated at the auriculo-ventricular border, was compared with the ventricular muscle without ganglia. Mechanical, chemical, thermic or faradic irritation will induce but a single contraction in the heart muscle free from ganglionic cells, as it is obtained by isolating the lower part of the ventricle. If, however, the preparation still contains the ganglia, these stimuli cause a series of contractions. In the case of electric stimulation (a single induction shock) the number of pulsations increased directly with the degree of stimulation.

As a second test object, the spinal cord of decapitated frogs was employed. While a single induction shock applied to a motor nerve produces but a single muscle contraction, the same stimulus applied to the spinal cord provokes an irregular tetanus of some duration.

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**THE ACCELERATOR NERVES OF THE HEART.**—Stricker and Wagner, *Mediz. Jahrb.*, Hft. 3, 1878 (abstr. in *Revue des Sci Méd.*).

It is now known that, in the dog, the acceleration of the pulse is produced by excitation of the *anse de Vieussens*, a nervous branch connecting the last cervical ganglion of the sympathetic to the first thoracic ganglion, or stellate ganglion. In order to find the real origin of the accelerator fibres of this branch, the authors isolated in the chest of the dog the trunk of the great

sympathetic, by cutting its afferent branches and exciting it, commencing at the sixth thoracic ganglion. The acceleration thus obtained is due to the action of the current on the *anse de Vieussens*—since, if we ligate the trunk below it, only the upper segment remains excitable. As the acceleration is the more marked, the nearer the electrodes approach this *anse de Vieussens*, we may conclude that the accelerator fibres increase in number as we pass upward.

What is the origin of these accelerator fibres? Do they come from the ganglia themselves or from the cord, passing along the afferent branches of the ganglia? They should be referred to the cord. To demonstrate this, the authors divided the vagus nerve, and obtained an acceleration of the pulse which diminished after section of the two branches of Vieussens; the pulsations then became a little more frequent than at the beginning of the experiment. The acceleration following the section of the vagus is due to a tonus coming from the cord; and the existence of this accelerator tonus proves the medullary origin of the fibres which end in the *anse* of Vieussens.

The authors go still further: they obtained an acceleration of the pulse from excitation of the cervical cord; under the same conditions they obtained it also after division of the accelerator nerves, but more slowly and only when the blood pressure had been considerably raised. The acceleration due to excitation of the cord is therefore due to two causes—excitation of the accelerator nerves and increase of the blood pressure.

*En résumé*, the accelerator fibres arise in the cervical cord, following first a descending track, to ascend again in the form of *anses*, or loops, to the six upper thoracic ganglia, and end in the *anse* of Vieussens.

As to the functions of the accelerator nerves, numerous experiments, noted with care, have demonstrated to the authors that these nerves counterbalance normally the influence of the inhibitory nerves. These two orders of nerve fibres are antagonistic to each other, and a true interference of action exists between them. When they are cut the phenomena of interference become still more marked by the use of induction currents. The authors combat the assertion of Baxt, according to which excitation of the vagus renders the heart insensible to the influence of the accelerator nerves.

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NERVE TERMINATIONS IN THE TONGUE.—Paul Lannegrace, *Thèse d'agrégation*, Paris, 1878 (abstract in *Revue des Sciences Médicales*).

The study of the nerve terminations in the muscles of the tongue not having been undertaken by any histologist, M. Lannegrace devoted his personal researches in this direction. He found that the terminal organs of the motor nerves offered nothing very peculiar, but that the muscles of the tongue, above all the other muscles of the body, are rich in nerve fibres.

After passing rapidly over the terminations of the nerves of general sensibility, the author goes into details on the structure of the taste papillæ in man and other vertebrates. These organs are formed (1) of epithelial cells (gustatory cells), clearly differentiated from the epithelial covering of